

POLYCYCLIC AROMATIC NITROGEN HETEROCYCLES (PANHs) IN THE INTERSTELLAR ENVIRONMENT

Douglas Hudgins, Andrew Mattioda, Charles Bauschlicher, Louis Allamandola, Space Sciences Astrophysics, NASA Ames Research Center, MS245-6, Moffett Field, CA 94040.

The discovery in 1973 of an unexpected infrared emission feature at 890 cm^{-1} (11.2 μm) in two carbon-rich nebulae opened the celestial door on what has become known as the Unidentified Infrared emitters (UIRs). The UIRs are a ubiquitous family of emission bands whose other components include significant features at 3050, 1610, 1310 and 1165 cm^{-1} (3.3, 6.2, 7.7, and 8.6 μm) as well as a complex array of minor bands, plateaus, and underlying continua. More than a decade of experimental and theoretical work indicates that Polycyclic Aromatic Hydrocarbons (PAHs), PAH ions, as well as closely related compounds, are responsible for the UIR emission features. Nitrogen is the fourth most abundant chemically reactive element in the interstellar environment and an essential component in biochemical processes. This presentation will discuss the Mid-IR spectroscopic trends and features observed in matrix isolated PANH molecules as well as their relationship to the UIR Bands.